

### CLAIMS

1. Device for sanding a wooden barrel (13), characterized in that it consists of a robot comprising:

- means (11, 17, 23) for loading said barrel (13),
- 5       - means (29a, 29b, 33a, 33b) for gripping and rotating said barrel (13) around the axis thereof,
- means (43a, 43b) for removing and replacing the two bilge hoops (39a, 39b) of said barrel (13),
- means (53) for sanding said barrel, and
- 10       - means (69) for removing said barrel (13).

2. Device according to Claim 1, characterized in that said gripping and rotating means comprise two mobile headstocks (29a, 29b) moving symmetrically and each including extendable clamping jaws (33a, 33b).

3. Device according to either Claim 1 or Claim 2, characterized in that said hoop removing and replacing means comprise a plurality of arms (43a to 43d) mounted to be mobile between an open position in which they are moved away from said barrel (13) and a closed position in which they are able to grip one of said bilge hoops (39a, 39b) and to slide along the axis (A) of said barrel (13).

20       4. Device according to Claim 3, characterized in that said arms (43a to 43d) are mounted on a carriage (45) adapted to slide between a first position in which said arms (43a to 43d) face one of said bilge hoops (39a, 39b) and a second position in which said arms (43a to 43d) face the other of said bilge hoops (39a, 39b).

25       5. Device according to Claim 4, characterized in that said arms (43a to 43d) comprise clamping shoes (49a to 49d) conformed to be applied to either of said bilge hoops (39a, 39b) interchangeably.

30       6. Device according to any one of Claims 3 to 5, characterized in that it comprises means for preventing said arms (43a to 43d) from gripping each of said bilge hoops (39a, 39b) too tightly.

7. Device according to any one of Claims 3 to 6, characterized in that there are four arms (43a to 43d).

35       8. Device according to any one of the preceding claims, characterized in that said sanding means comprise a sanding head (53) including a belt sander (55).

9. Device according to Claim 8, characterized in that said sanding head (53) is mounted so that it is able to slide along the axis (A) of said barrel (13).

5 10. Device according to Claim 9, characterized in that it comprises means (63a, 63b) for varying the distance of said sanding head (53) from the axis (A) of said barrel (13).

11. Device according to Claim 10, characterized in that said distance varying means comprise a deformable parallelogram (63a, 63b).

10 12. Device according to any one of Claims 8 to 11, characterized in that it comprises means (65, 67) for varying the inclination of said sanding head (53) to the axis (A) of said barrel (13).

13. Device according to any one of Claims 8 to 12, characterized in that it comprises means for adjusting the pressure exerted on said barrel (13) by said sanding head (53).

15 14. Device according to any one of the preceding claims, characterized in that it comprises a safety enclosure with an entry airlock (3) and an exit airlock (5) for said barrel (13).

20 15. Device according to Claim 14, characterized in that it comprises means (11) for sequencing the passage of said barrel (13) into said entry airlock (3).

16. Device according to any one of the preceding claims, characterized in that it comprises means for identifying the position of the bunghole (41) of said barrel (13).

25 17. Device according to any one of the preceding claims, characterized in that it comprises means (25a, 25b) for immobilizing and lifting said barrel (13).

18. Method applied to a device according to any one of the preceding claims characterized in that it comprises the steps of:

- 30 -a) placing said barrel (13) between said gripping and rotating means (29a, 29b, 33a, 33b),
- b) gripping said barrel (13) with said gripping and rotating means (29a, 29b, 33a, 33b),
- c) removing one of said bilge hoops (39a, 39b) on one half of said barrel (13) with said hoop removing and replacing means (43a, 43b),
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- d) rotating said barrel (13) with said gripping and rotating means (29a, 29b, 33a, 33b),
- e) sanding said half barrel with said sanding means (53),
- f) stopping the rotation of said barrel (13),
- 5 -g) replacing said bilge hoop with said hoop removing and replacing means (29a, 29b, 33a, 33b),
- h) repeating steps c) to g) for the other bilge hoop and the other half of said barrel (13), and
- i) releasing said barrel (13) from said gripping and rotating means
- 10 (29a, 29b, 33a, 33b).

19. Method according to Claim 18 applied to a device according to Claim 9, characterized in that, for executing said step e), said sanding head (53) is moved in the direction of the axis (A) of said barrel (13).

15 20. Method according to either Claim 18 or Claim 19 applied to a device according to Claim 16, characterized in that, between said steps b) and c), the position of said bughole (41) is identified in order to position said barrel (13) so that said hoop removing and replacing means (43a to 43d) do not interfere with riveted areas of said bilge hoops (39a, 39b).

20 21. Method according to any one of Claims 18 to 20 applied to a device according to any one of Claims 1 to 17, characterized in that, to execute said step c), said barrel (13) is rotated so that it occupies a plurality of successive positions and, in each of said positions, removal forces are exerted on said bilge hoop with said hoop removing and replacing means.